

CLAIMS

1. An apparatus for fixing a plate to bony material, comprising:
 - a plate having at least one opening having a spherical curvature extending at least partially through the thickness of the plate; and
 - at least one fastener having a head that interferes with the plate at an interference point;
 - wherein the head is capable of engaging with and passing the interference point to communicate with the spherical curvature.
2. The apparatus according to claim 1, wherein the interference point includes at least one engagement area and at least one relief area.
3. The apparatus according to claim 1, wherein tangents from the outer most portion of the spherical curvature of the plate intersect.
4. The apparatus according to claim 3, wherein the angle of intersection of the tangents is between about 1 and about 5 degrees.
5. The apparatus according to claim 3, wherein the angle of intersection of the tangents is between about 1 and about 3 degrees.
6. The apparatus according to claim 2, wherein the at least one relief area comprises less than about 40% of the interference point.
7. The apparatus according to claim 2, wherein the at least one relief area comprises less than about 30% of the interference point.
8. The apparatus according to claim 1, wherein the fastener head comprises a partially spherical outer surface corresponding approximately to the spherical

surface of the plate opening, at least one slit located on the fastener head to permit outward expansion of the fastener head, and a locking screw capable of being received in a receptacle formed in the fastener head.

9. An apparatus for stabilizing at least two bony structures, comprising:
a plate wherein more than one aperture is configured and adapted to include an interference area integrally formed therein to prevent a fastener from backing out of the interference area.
10. The apparatus according to claim 9, further comprising a fastener having a head capable of engaging with and passing through the interference area.
11. The apparatus according to claim 9, wherein the interference area is included in a spherical curvature having at least one engagement area and at least one relief area.
12. The apparatus according to claim 11, wherein tangents to the spherical curvature intersect.
13. The apparatus according to claim 12, wherein the angle of intersection of the tangents is between about 1 and 5 degrees.
14. The apparatus according to claim 9, further comprising an opening selectively positioned to increase the magnitude of interference at the interference point.
15. The apparatus according to claim 14, wherein the opening is configured and adapted to pass a wedge shaped screw.
16. The apparatus according to claim 9, wherein the fastener has a fastener head comprising a partially spherical outer surface corresponding approximately to the spherical surface of the plate opening, at least one slit located on the fastener head

to permit outward expansion of the fastener head, and a locking screw capable of being received in a receptacle formed in the fastener head.

17. An apparatus for fixing a plate to bony material, consisting essentially of:
 - a plate comprising at least one opening having a spherical curvature; and
 - at least one fastener having a head capable of engaging with and passing through an interference point of the spherical curvature;
 - wherein the fastener is prevented from backing out of the opening by the interference point.
18. The apparatus according to claim 17, further comprising another opening selectively positioned to increase the magnitude of interference at the interference point.
19. The apparatus according to claim 17, wherein tangents to the spherical curvature intersect.
20. The apparatus according to claim 17, wherein the fastener head comprises a partially spherical outer surface corresponding approximately to the spherical surface of the plate opening, at least one slit located on the fastener head to permit outward expansion of the fastener head, and a locking screw capable of being received in a receptacle formed in the fastener head.
21. A fastener for mounting an implant to bone comprising:
 - an elongate fastener body having a longitudinal axis, a proximal end, and a distal end;
 - a threaded portion disposed on the distal end of the fastener, wherein said threaded portion is capable of screwing into bone;
 - a fastener head portion disposed on the proximal end of the fastener, wherein the fastener head comprises:
 - a partially spherical outer surface;

in interior surface defining a receptacle for receiving a locking fastener;
and
at least one slit extending between the outer surface and interior surface of
the fastener head to permit outward expansion of the fastener head; and
a locking fastener capable of being received in the receptacle of the
fastener head.

22. The fastener of claim 21, further comprising:
a plate having at least one aperture configured and adapted to include an
interference area integrally formed therein to prevent the fastener from backing out of the
interference area.
23. The fastener of claim 21, further comprising:
a plate having at least one opening having a spherical curvature extending at least
partially through the thickness of the plate, wherein insertion of the fastener head
interferes with the plate at an interference point, and wherein the fastener head is capable
of engaging with and passing the interference point to communicate with the spherical
curvature.
24. The fastener of claim 21, wherein the fastener head comprises two or more slits
extending between the outer surface and interior surface of the fastener head to permit
outward expansion of the fastener head.
25. The fastener of claim 24, wherein the fastener head comprises four or more slits
extending between the outer surface and interior surface of the fastener head to permit
outward expansion of the fastener head.